

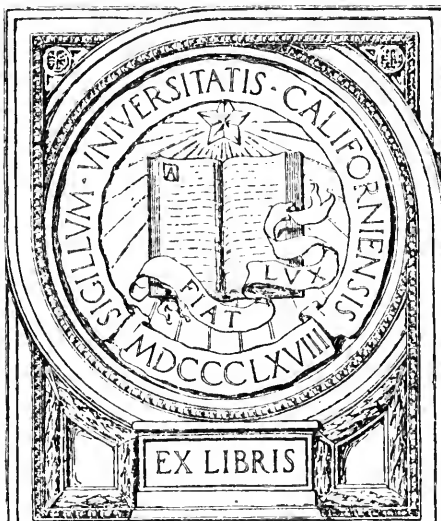
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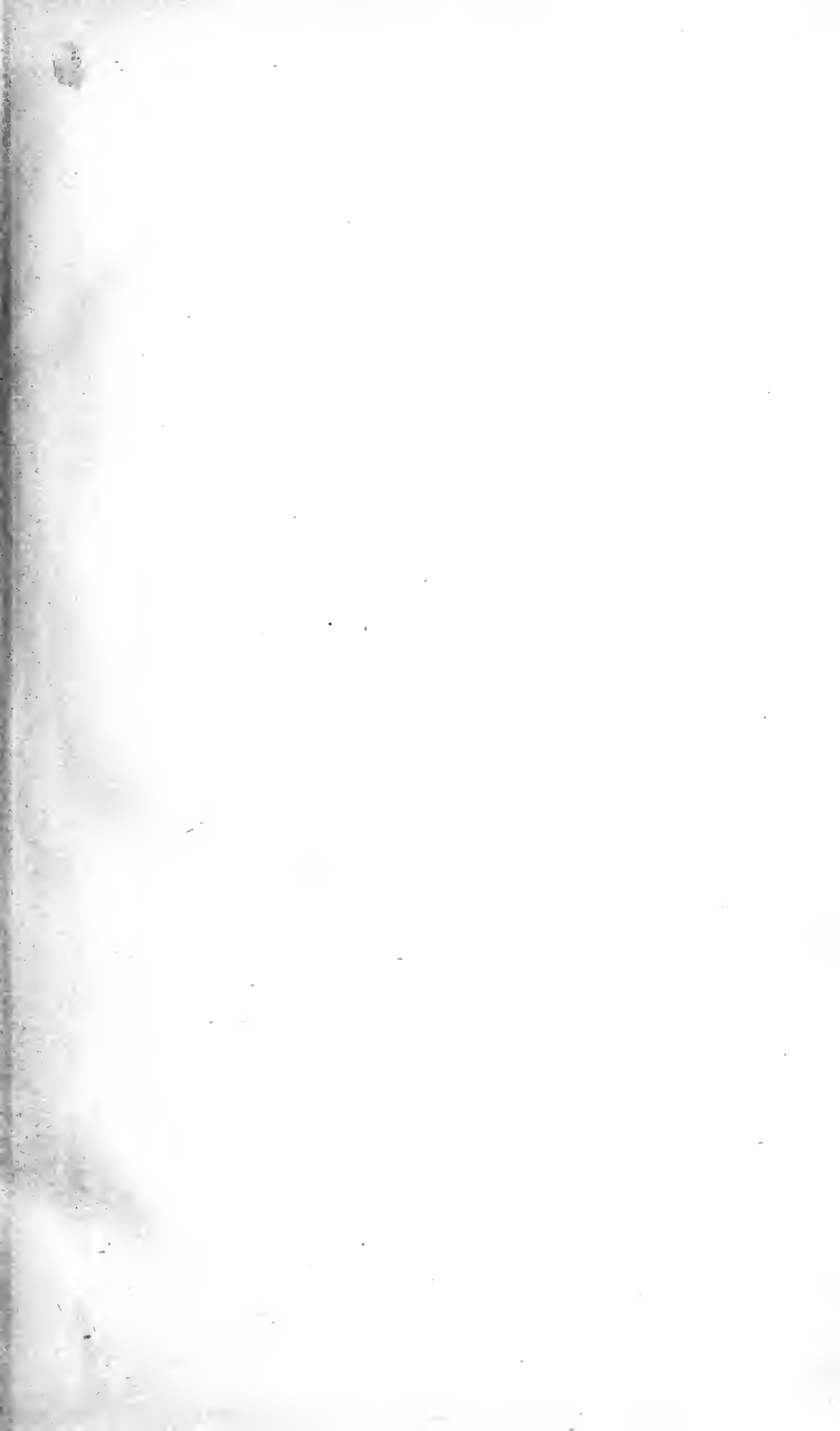
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# " How To Value Bonds."

## INDEMNITY BONDS FOR 15 OR 20 YEARS

(including insurance), for from

\$1,000 to \$100,000,

ARE ISSUED BY THE

## EQUITABLE LIFE ASSURANCE SOCIETY

OF THE UNITED STATES,

Payable at the death of the assured, if previous to their maturity.

PAYABLE FOR IN ANNUAL, SEMI-ANNUAL OR QUARTERLY INSTALMENTS.

15-YEAR BONDS PAID UP IN 10 YEARS.

ANNUAL INSTALMENTS PER \$1,000.

20-YEAR BOND—20 ANNUAL INSTALMENTS.			15-YEAR BOND—10 ANNUAL INSTALMENTS.		
Age at issue.			Age at issue.		
20.....	\$50	Cash return on maturity of bond at end of 20 years (on basis explained below), \$1,700.	20.....	\$100	Cash return on maturity of bond at end of 15 years (on basis explained below), between \$1,300 and \$1,400.
30.....	50		30.....	100	
40.....	50		40.....	100	
50.....	60		50.....	100	
60.....	80		60.....	120	

The exact amount of profits which will be earned and distributed among the holders of such Indemnity Bonds as become fully paid-up and then mature, cannot be stated in advance, as they depend in a measure upon varying quantities, such as the rate of interest, mortality and expense ; but careful calculations, based on the experience of the Society up to the present time, show the surplus profits which would be payable with such bonds if they had been issued by the Society 15 or 20 years ago and matured to-day. While such figures can give only an approximate idea of the results of the future, they furnish the best attainable data upon which to judge of the value of these Bonds.

THE THIRTIETH ANNUAL STATEMENT OF  
*The Equitable Life Assurance Society*  
OF THE UNITED STATES,

*For the Year Ending December 31, 1889.*

AMOUNT OF LEDGER ASSETS, JANUARY 1, 1889. ....	\$89,427,026.92
Less Contingent Sinking Fund.....	600,000.00
	<u>\$88,827,026.92</u>

<i>Income.</i>	
Premiums .....	\$25,357,522.75
Interest, Rents, etc. ....	5,035,765.53
	<u>\$30,393,288.28</u>
	<u>\$119,220,315.20</u>

<i>Disbursements.</i>	
Claims by Death and Matured Endowments.....	\$7,878,499.53
Dividends, Surrender Values, Annuities and Discounted Endowments....	3,964,358.36
Total Paid Policy-holders.....	<u>\$11,842,857.89</u>
Dividend on Capital .....	7,000.00
Commissions, Advertising, Postage and Exchange.....	3,176,239.09
General Expenses, State, County, City Taxes.....	2,820,855.91
	<u>\$17,846,952.89</u>

<i>Net Ledger Assets, December 31, 1889</i> .....	<u>\$101,373,362.31</u>
---	-------------------------

<i>Assets.</i>	
Bonds and Mortgages.....	\$23,637,873.52
Real Estate, including the Equitable Buildings and purchases under foreclosure of mortgages.....	16,536,541.33
United States Stocks, State Stocks, City Stocks, in Trust Companies and other Investments.....	45,645,395.63
Loans secured by Bonds and Stocks (Market Value, \$3,404,859) .....	2,705,000.00
Real Estate outside the State of New York, including purchases under foreclosure of mortgages.....	8,116,755.06
Cash in Banks and in transit (since received and invested) .....	3,960,630.63
Due from Agents on account of Premiums .....	771,166.14
	<u>\$101,373,362.31</u>
Market value of Stocks and Bonds over book value. ....	2,697,138.55
Interest and Rents due and accrued.....	829,895.26
Premiums deferred and in transit.....	2,249,913.00
<i>Total Assets, December 31, 1889</i> .....	<u>\$107,150,309.12</u>

*I hereby certify, that after a personal examination of the securities and accounts described in this statement, I find the same to be true and correct as stated.*

JOHN A. McCALL, Comptroller.

<i>Total Liabilities, including legal reserve on all existing Policies (4% Standard) .....</i>	<u>\$84,329,234.92</u>
<i>Total Undivided Surplus over 4% Reserve.....</i>	<u>\$22,821,074.20</u>
Of which the proportion contributed (as computed) by Policies in general class, <i>ls.</i> .....	
Of which the proportion contributed (as computed) by Policies in Tontine class, <i>ls.</i> .....	\$6,848,611.20
	15,972,463.00

*We certify to the correctness of the above calculation of the reserve and surplus. From this surplus the usual dividends will be made.* GEO. W. PHILLIPS, } *Actuaries.*  
J. G. VAN CISE, }

<i>New Assurance written in 1889</i> .....	\$175,264,100
<i>Total Outstanding Assurance</i> .....	<u>\$631,016,666</u>

We, the undersigned, have, in person, carefully examined the accounts, and counted and examined in detail the assets of the Society, and certify that the foregoing statement thereof is correct.

BENNINGTON F. RANDOLPH,	} Special Committee of the Board of Directors, appointed to examine the accounts and assets at the close of the year 1889.
THOS. S. YOUNG,	
GEORGE W. CARLETON,	
HENRY S. TERBELL,	
E. BOUDINOT COLT,	

BOARD OF DIRECTORS.

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JAMES W. ALEXANDER, VICE-PRESIDENT.

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FIRST EDITION.

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# HOW TO VALUE BONDS.

*PUBLISHED UNDER THE AUSPICES OF*  
**THE EQUITABLE LIFE ASSURANCE SOCIETY**  
*OF NEW YORK.*

BY,

**HORATIO J. CROAD,**  
ACTUARY, ETC., 16 AND 18 EXCHANGE PLACE, NEW YORK.

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THE publication of this little treatise was suggested by the fact that there have been so many doubts and so much mystery as to the mode of valuing bonds mathematically, and also as to the real meaning of a person being able to pay a certain price for a bond of a particular denomination in order to realize either a lower or higher rate of interest on the investment than the bond calls for.

*For instance.* An 8% \$1,000 bond having 5 years to run, interest payable semi-annually and costing \$1,284.14 (market price, 128.41), is said to realize, at the rate of 2% annually or 1% semi-annually on the investment.

The following will explain its meaning:

**First.** The investor receives the semi-annual interest on the bond.....\$ 40.00  
1% on the investment of \$1,284.14 is.. 12.84

Difference.....\$ 27.16

If \$27.16 is set aside every half year and invested at 2% annually (or 1% semi-annually), it would in 5 years amount to.....\$ 284.14  
To which add the face value of the bond..... 1,000.00

The original amount invested.....\$1284.14

**Second.** The bond at maturity is worth \$1,000, and the semi-annual interest is.....\$ 40.00

By the payment of \$30.00 at the end of every half year (interest computed at 1% semi-annually), the investor can borrow at the time the bond is purchased \$284.14, and at the end of 5 years the debt would be liquidated.

So that the investor of \$1,000 gets semi-annually .....\$ 40.00  
Pays out for the \$284.14..... 30.00

1% on \$1,000 is the difference .....\$ 10.00

**Third.** A 4% \$1,000 bond having 5 years to run, interest payable semi-annually to realize 4½% on the investment, is said to be worth \$977.83 (market value, 97.78).

That is, on the investment of \$977.83 the investor receives semi-annually \$ 20.00  
An investment of \$22.17 (\$1,000 minus \$977.83) would yield every six months at 4½% annually, and then the fund would be exhausted.....\$ 2.50

Total amount received semi-annually.....\$ 22.50

\$22.50 is 2¼% on \$1,000 semi-annually, or 4½% annually on the investment.

**Fourth.** Or 2¼% on the investment of \$977.83 is.....\$ 22.00  
Actual semi-annual interest..... 20.00

Difference.....\$ 2.00

If the investor spend \$22.00 semi-annually instead of \$20.00 there will be a deficiency of \$2.00 every six months, which, had it been invested at 4½% annually (2¼% semi-annually), it would in 5 years have amounted to \$22.17, which is balanced by the difference between \$1,000 received at the maturity of the bond and the \$977.83, the amount paid for it.

*Note.*—The reinvestments are made at the rate of interest to be realized. The U. S. Treasury Department, Price, and others have adopted this method as per letter in possession of the author of this work from the late Actuary Elliott of the U. S. Treasury, and the tables in this work are intended for the valuation of bonds according to it.

*Example I.* What is the value of an 8% bond for \$1,000, having 5 years to run, interest payable semi-annually so as to realize 2% (1% semi-annually on the investment)?

Semi-annual interest on bond.....	\$40.00
\$40.00 every half year for 5 years, at 2% per annum, amounts to.....	\$ 418.18
Add.....	1,000.00
	<u>\$1,418.18</u>

\$1,418.18 due in 5 years, discounted at 2% per annum (1% semi-annually),  
is.....\$1,284.14

\$1,284.14 is the present value of the bond—that is, \$1.00 in 5 years, at  
2% per annum (interest semi-annual), amounts to.....\$ 1.10462  
\$1,418.18 divided by 1.10462.....\$1,284.14

*Example II.* What is the value of a 4% bond for \$1,000, having 5 years to run, interest payable semi-annually, so as to realize 4½% (2¼% semi-annually) on the investment?

Semi-annual interest on bond.....	\$20.00
\$20.00 every half year for 5 years, at 4½% per annum, amounts to.....	\$ 221.51
Add.....	1,000.00
	<u>\$1,221.51</u>

Amount of \$1.00 in 5 years at 4½%, interest payable semi-annually.....\$ 1.2492  
\$1,221.51 divided by 1.2492.....\$ 977.83

\$977.83 is the present value of the bond.

#### ANOTHER METHOD.

A much more simple method is the following.

<i>Example I.</i> (See above.) Semi-annual interest on bond.....	\$ 40.00
“ to be realized.....	10.00
	<u>30.00</u>
Difference.....	\$ 30.00

So that a price is to be paid for it now which will cause a loss to the investor of \$30.00 every six months out of the \$40.00 received.

The present value, then, of future losses will be the premium to be paid on the bond. Referring to Table I, page 10. The present value of \$1.00 for every half year for 5 years, at 2% per annum, is \$9.4713. This, multiplied by 30, gives the premium on the bond.....\$ 284.14  
Add.....1,000.00

The value of the bond.....\$1,284.14

# PROOF.

The following is the proof, and shows the values every six months to maturity:

Present Value, \$1,284.14, 5 yrs. to maturity.					\$1,145.61
Add 1% for 6 mos	12.84			Add 1%	11.46
	<u>1,296.98</u>				<u>1,157.07</u>
Deduct	40.00			Deduct	40.00
	<u>1,256.98, 4½ " "</u>				<u>1,117.07, 2 yrs. to maturity.</u>
Add 1%	12.57			Add 1%	11.17
	<u>1,269.55</u>				<u>1,128.24</u>
Deduct	40.00			Deduct	40.00
	<u>1,229.55, 4 " "</u>				<u>1,088.24, 1½ " "</u>
Add 1%	12.30			Add 1%	10.88
	<u>1,241.85</u>				<u>1,099.12</u>
Deduct	40.00			Deduct	40.00
	<u>1,201.85, 3½ " "</u>				<u>1,059.12, 1 year "</u>
Add 1%	12.02			Add 1%	10.59
	<u>1,213.87</u>				<u>1,069.71</u>
Deduct	40.00			Deduct	40.00
	<u>1,173.87, 3 " "</u>				<u>1,029.71, ½ " "</u>
Add 1%	11.74			Add 1%	10.29
	<u>1,185.61</u>				<u>1,040.00</u>
Deduct	40.00			Deduct	40.00
Forward	<u>1,145.61, 2½ " "</u>				<u>1,000.00 at maturity.</u>

## ANOTHER PROOF.

\$1.00 every six months for five years at 2% per annum amounts to.....\$10.46221

Dividing the premium, \$284.14 by 10.46221..... 27.16

\$27.16 is the semi-annual Sinking Fund to be set aside and improved at

2% per annum, and will at the maturity of the bond amount to.....284.14

\$40.00 less \$27.16 is \$12.84.

\$12.84 is the net interest realized on the investment semi-annually, and is 1% semi-annually on the investment, or 2% annually.

## PROOF BY SINKING FUND.

	\$27.16 end of ½ year.				\$138.53
Add 1%	.27			Add 1%	1.38
"	<u>27.16</u>			"	<u>27.16</u>
	54.59 " " 1 "				<u>167.07 end of 3 years.</u>
Add 1%	.54			Add 1%	1.67
"	<u>27.16</u>			"	<u>27.16</u>
	82.29 " " 1½ yrs.				<u>195.90 " " 3½ "</u>
Add 1%	.82			Add 1%	1.96
"	<u>27.16</u>			"	<u>27.16</u>
	110.27 " " 2 "				<u>225.02 " " 4 "</u>
Add 1%	1.10			Add 1%	2.25
"	<u>27.16</u>			"	<u>27.16</u>
Forward	<u>138.53 " " 2½ "</u>				<u>254.43 " " 4½ "</u>
				Add 1%	2.55
				"	<u>27.16</u>
					<u>284.14 " " 5 "</u>

Subtracting these respective amounts from \$1,284.14 and the results will be the values as arrived at by the former proof :

\$1,284.14	less	*	*	\$1,284.14,	5	years to maturity.
1,284.14	"	\$27.16		1,256.98	4½	" "
1,284.14	"	54.59		1,229.55	4	" "
1,284.14	"	82.29		1,201.85	3½	" "
1,284.14	"	110.27		1,173.87	3	" "
1,284.14	"	138.53		1,145.61	2½	" "
1,284.14	"	167.07		1,117.07	2	" "
1,284.14	"	195.90		1,088.24	1½	" "
1,284.14	"	225.02		1,059.12	1	year "
1,284.14	"	254.43		1,029.71	½	" "
1,284.14	"	284.14		1,000.00		maturity.

Being the same results as by the former proof.

#### PROOF BY THESE TABLES.

Referring to Table I., page 10.

The present values of \$1.00 every six months for 5 years, at 2% per annum, are as follows :

5	years.....	\$9.47130
4½	" .....	8.56602
4	" .....	7.65168
3½	" .....	6.72819
3	" .....	5.79548
2½	" .....	4.85343
2	" .....	3.90197
1½	" .....	2.94099
1	year .....	1.97040
½	" .....	.99010

Multiplying these respectively by \$40.00 less \$10.00 (\$30.00) will give the premiums, and then adding \$1,000 will give the values, as follows :

5	years, \$284.14; add \$1,000	....	\$1,284.14
4½	" 256.98	" "	1,256.98
4	" 229.55	" "	1,229.55
3½	" 201.84	" "	1,201.84
3	" 173.87	" "	1,173.87
2½	" 145.61	" "	1,145.61
2	" 117.06	" "	1,117.06
1½	" 88.24	" "	1,088.24
1	year 59.12	" "	1,059.12
½	" 29.71	" "	1,029.71
..	" * * "	" "	1,000.00

NOTE.—There is a variation of 1 cent occasionally on account of fractions.

Treating each of these values as those of an independent bond each half year, the results would be the same, but the Sinking Funds would be different, and as follows :

Present value of a bond having 5 years to run.....	\$1,284.14
" " " " " 4 " "	1,229.55
" " " " " 3 " "	1,173.87
" " " " " 2 " "	1,117.07
" " " " " 1 year "	1,059.12

The sinking funds for these are as follows :

5 year bond, \$40.00 less \$12.84	\$27.16
4 " " " " 12.30	27.70
3 " " " " 11.74	28.26
2 " " " " 11.17	28.83
1 " " " " 10.59	29.41

The amounts \$12.84, \$12.30, etc., are obtained by taking 1% of the values of the bonds—that is,

1% on \$1,284.14	\$12.84
" 1,229.55	12.30
" 1,173.87	11.74
" 1,117.07	11.17
" 1,059.12	10.59

#### THE MODE OF PROVING TABLES I., II., III., IV., V., VI., VII., VIII., IX., AND X.

*For instance.* The present value of \$1.00 each half year for 5 years, at 2% per annum (1% semi-annually), is \$9.47130 (see Table I., page 10).

	\$9.47130, 5 yrs.		\$4.85343
Add 1%	9472	Add 1%	4854
	<hr/> 9.56602		<hr/> 4.90197
Deduct	1.00	Deduct	1.00
	<hr/> 8.56602, 4½ "		<hr/> 3.90197, 2 yrs.
Add 1%	8566	Add 1%	3902
	<hr/> 8.65168		<hr/> 3.94099
Deduct	1.00	Deduct	1.00
	<hr/> 7.65168, 4 "		<hr/> 2.94099, 1½ "
Add 1%	7651	Add 1%	2941
	<hr/> 7.72819		<hr/> 2.97040
Deduct	1.00	Deduct	1.00
	<hr/> 6.72819, 3½ "		<hr/> 1.97040, 1 year
Add 1%	6729	Add 1%	1970
	<hr/> 6.79548		<hr/> 1.99010
Deduct	1.00	Deduct	1.00
	<hr/> 5.79548, 3 "		<hr/> .99010, ½ "
Add 1%	5795	Add 1%	990
	<hr/> 5.85343		<hr/> 1.00000
Deduct	1.00	Deduct	1.00
Forward	<hr/> 4.85343 2½ "		<hr/> * *

#### RULE FOR VALUING BONDS.

Find the difference between the semi-annual interest on the bond and the interest to be realized. Multiply it by the present value of \$1.00 for every half year during the term of the bond at the *rate to be realized*. If the rate to be realized is greater than that of the bond, subtract the result from \$1,000, and if the rate to be realized is less than that of the bond, add it to \$1,000. The amounts thus obtained will be the values required.

**NOTE.**—Where time and price are given, the rate of interest realized can only be approximately ascertained.

*Example III.* What is the value of a 4% bond for \$1,000, having 50 years to run, so as to realize 4½% on the investment, interest payable semi-annually?

Semi-annual interest on bond.....	\$20.00
"                "      to be realized on the bond.....	22.50

Difference.....	<u>\$2.50</u>
-----------------	---------------

Present value of \$1.00 for every half year for fifty years at the rate to be realized (4½% per annum). See Table VI.....	\$39.64174
---	------------

\$39.64174 multiplied by 2.50.....	<u>\$99.10</u>
------------------------------------	----------------

As the rate to be realized is greater than that of the bond, this amount has to be subtracted from \$1,000.

\$1,000 minus \$99.10 .....	<u>\$ 900.90</u>
-----------------------------	------------------

\$900.90 is the value of the bond, or market value, 90.09.

*Example IV.* What is the value of the bond in the last example so as to realize 3½% on the investment?

Semi-annual interest on bond.....	\$20.00
"                "      to be realized.....	17.50

Difference.....	<u>\$ 2.50</u>
-----------------	----------------

Present value of \$1.00 for every half year for fifty years at the rate to be realized (3½% per annum). See Table IV.....	\$47.06147
---	------------

\$47.06147 multiplied by 2.50.....	<u>\$ 117.65</u>
------------------------------------	------------------

As the rate to be realized is less than that of the bond, this amount has to be added to \$1,000.

\$1,000 plus \$117.65.....	<u>\$1,117.65</u>
----------------------------	-------------------

\$1,117.65 is the value of the bond, or market value, 111.77.

NOTE.—Of course bonds of any amount would be dealt with as in the foregoing examples.

*Example V.* What are the values of an 8% \$1,000 bond, having 50 years to run, so as to realize 2, 2¼, 2½, 2¾, 3, 3¼, 3½, 3¾, 4, 4¼, 4½, 4¾, 5, 5¼, 5½, 5¾, 6, 6¼, 6½, 6¾ and 7% interest payable semi-annually?

Referring to Tables, the present values of \$1.00 every six months for 50 years, at the rates required to be realized, are as follows :



At	Present Value of \$1.00 every half year for 50 years.	Difference in semi-annual interest realized and that to be realized.	At	Present Value of \$1.00 every half year for 50 years.	Difference in semi-annual interest realized and that to be realized.
2 %	\$63.02888	\$30.00	4¾ %	\$38.07860	\$16.25
2¼	59.84906	28.75	5	36.61410	15.00
2½	56.90134	27.50	5¼	35.24058	13.75
2¾	54.16588	26.25	5½	33.95104	12.50
3	51.62470	25.00	5¾	32.73910	11.25
3¼	49.26150	23.75	6	31.59891	10.00
3½	47.06147	22.50	6¼	30.52513	8.75
3¾	45.01117	21.25	6½	29.51288	7.50
4	43.09835	20.00	6¾	28.55768	6.25
4¼	41.31192	18.75	7	27.65543	5.00
4½	39.64174	17.50			

Multiplying these respective amounts, and then adding \$1,000 to each result, will give the respective values.

$$\begin{array}{r}
 \text{For instance : At 2\%, } 63.02888 \times 30 \dots\dots\dots \$1890.87 \\
 \text{Add} \dots\dots\dots 1,000.00 \\
 \hline
 \$2890.87
 \end{array}$$

\$2890.87 is the value of the bond, or market value, 289.09.

Completing the operations in a similar manner, and the following are the results obtained :

At	Value of \$1,000 bond.	Market quotation.	At	Value of \$1,000 bond.	Market quotation.
2 %	\$2,890.87	289.09	4¾ %	\$1,618.78	161.88
2¼	2,720.66	272.07	5	1,549.21	154.92
2½	2,564.79	256.48	5¼	1,484.56	148.46
2¾	2,421.85	242.19	5½	1,424.39	142.44
3	2,290.62	229.06	5¾	1,368.31	136.83
3¼	2,169.96	217.00	6	1,315.99	131.60
3½	2,058.88	205.89	6¼	1,267.10	126.71
3¾	1,956.49	195.65	6½	1,221.35	122.14
4	1,861.97	186.20	6¾	1,178.49	117.85
4¼	1,774.60	177.46	7	1,138.28	113.83
4½	1,693.73	169.37			

## FIXED RATES FOR SINKING FUNDS, ETC.

There are many advocates in this country and in Europe of a fixed rate of interest for all sinking funds (annuities to provide for difference between par value and cost of bonds). Without an arbitrary rate no comparative values can be made. Many Railroad, Banking, Insurance and other corporations have a regular Sinking Fund account on their ledgers, to which is charged or credited the Sinking Fund, which has to be set aside at regular periods, and credited with interest, so that at the bond's maturity there will not only be realized the amount which the bond calls for, but there will also be a fund to be added to it which will make it up to its original cost. Also from this fund can be used in the same way at regular periods an amount which, with compounding interest, would have amounted to, at the bond's maturity, the difference between cost and face value.

When the Sinking Fund (which is usually at  $3\frac{1}{2}\%$  or  $4\%$ ) is at a fixed rate, the method of arriving at the bond's value is as follows :

*Example VI.* What is the value of a  $3\frac{1}{2}\%$  \$1,000 bond, having 50 years to run, so as to realize  $3\%$  annually on the investment, interest payable semi-annually, and the Sinking Fund to be at  $4\%$  per annum ?

Difference between semi-annual interest realized on bond and that to be realized.....	\$2.50
Amount of \$1.00 per every 6 months for 50 years at $4\%$ per annum.....	\$312.2323
$\$312.2323 \times 2.50 \times 100$ .....	\$78,058.08

See Table XI.

$\$100 + 1\frac{1}{2} (\$312.2323)$ .....	\$568.34845
$\$78,058.08$ divided by 568.34845.....	\$137.34
Add.....	1000.00
	<u>\$1137.34</u>

\$1137.34 is the value of the bond.

### PROOF.

Semi-annual Sinking Fund is $\frac{\$137.34}{312.2323}$ .....	\$ .44
Net semi-annual interest, \$17.50 less 44 cents.....	17.06
\$17.06 is $1\frac{1}{2}\%$ semi-annually on \$1137.34, or $3\%$ annually.	

CAR TRUST, BUILDING LOAN AND INSTALMENT PLAN PROBLEMS.

By these tables can also be solved problems such as the following :

*Example VII.* A person borrowing (say) \$5,000 wishes to pay it back (principal and interest) in (say) fifty equal semi-annual instalments. What would be the semi-annual payment, interest computed at  $3\frac{1}{2}\%$ , 4 and  $4\frac{1}{2}\%$  per annum?

Referring to Tables III. and V., the present values of \$1.00 every half year for 25 years (50 payments) are

At $3\frac{1}{2}\%$ .....	\$33.14121
" 4%.....	31.42361
" $4\frac{1}{2}\%$ .....	29.83440

Dividing \$5,000 respectively by these amounts, and the following are the results :

At $3\frac{1}{2}\%$ .....	\$150.87
" 4%.....	159.12
" $4\frac{1}{2}\%$ .....	167.59

So that a person borrowing \$5,000, by paying half yearly \$150.87 for 25 years pays off the loan and also interest at  $3\frac{1}{2}\%$  per annum, and similarly by paying the other amounts the interest paid is at 4 and  $4\frac{1}{2}\%$ .

PROOF.

\$5,000 in 25 years, at $3\frac{1}{2}\%$ per annum (interest semi-annual-ly), amounts to.....	\$11,903.95
\$5,000 in 25 years, at 4% per annum (interest semi-annually), amounts to .....	13,457.95
\$5,000 in 25 years, at $4\frac{1}{2}\%$ per annum (interest semi-annual-ly), amounts to.....	15,210.25
and	
\$150.87 every half year for 25 years, at $3\frac{1}{2}\%$ per annum, amounts to.....	11,903.95
\$159.12 every half year for 25 years, at 4% per annum, amounts to.....	13,457.95
\$167.59 every half year for 25 years, at $4\frac{1}{2}\%$ per annum, amounts to.....	15,210.25

TABLE I.

## PRESENT VALUE OF ONE DOLLAR EVERY HALF YEAR.

No. of years.	At rates per cent. per annum.					
	1.	1¼.	1½.	1¾.	2.	2¼.
½	.99502	.99379	.99256	.99133	.99010	.98888
1	1.98510	1.98141	1.97772	1.97405	1.97040	1.96675
1½	2.97025	2.96289	2.95556	2.94826	2.94099	2.93374
2	3.95050	3.93827	3.92611	3.91401	3.90197	3.88998
2½	4.92587	4.90760	4.88944	4.87138	4.85343	4.83558
3	5.89638	5.87091	5.84560	5.82045	5.79548	5.77066
3½	6.86207	6.82823	6.79464	6.76129	6.72819	6.69534
4	7.82296	7.77961	7.73661	7.69397	7.65168	7.60973
4½	8.77906	8.72508	8.67158	8.61856	8.56602	8.51395
5	9.73041	9.66467	9.59958	9.53513	9.47130	9.40811
5½	10.67703	10.59843	10.52067	10.44374	10.36763	10.29232
6	11.61893	11.52639	11.43491	11.34448	11.25508	11.16669
6½	12.55615	12.44859	12.34235	12.23740	12.13374	12.03134
7	13.48871	13.36506	13.24302	13.12258	13.00370	12.88637
7½	14.41662	14.27583	14.13700	14.00008	13.86505	13.73189
8	15.33993	15.18095	15.02431	14.86997	14.71787	14.56800
8½	16.25863	16.08045	15.90503	15.73231	15.56225	15.39480
9	17.17277	16.97436	16.77918	16.58717	16.39827	16.21241
9½	18.08236	17.86272	17.64683	17.43462	17.22601	17.02093
10	18.98742	18.74556	18.50802	18.27471	18.04555	17.82045
10½	19.88798	19.62291	19.36280	19.10752	18.85698	18.61107
11	20.78406	20.49482	20.21121	19.93311	19.66038	19.39290
11½	21.67568	21.36131	21.05331	20.75153	20.45582	20.16604
12	22.56287	22.22242	21.88915	21.56286	21.24339	20.93057
12½	23.44564	23.07818	22.71876	22.36715	22.02316	21.68659
13	24.32402	23.92863	23.54219	23.16446	22.79520	22.43421
13½	25.19803	24.77379	24.35949	23.95485	23.55961	23.17351
14	26.06769	25.61371	25.17071	24.73839	24.31644	23.90458
14½	26.93302	26.44841	25.97589	25.51513	25.06579	24.62752
15	27.79405	27.27792	26.77508	26.28514	25.80771	25.34242
15½	28.65080	28.10228	27.56832	27.04847	26.54229	26.04936
16	29.50328	28.92152	28.35565	27.80517	27.26959	26.74844
16½	30.35153	29.73567	29.13712	28.55531	27.98969	27.43974
17	31.19555	30.54477	29.91278	29.29895	28.70267	28.12336
17½	32.03537	31.34884	30.68266	30.03613	29.40858	28.79936
18	32.87102	32.14791	31.44680	30.76692	30.10750	29.46785
18½	33.70250	32.94203	32.20527	31.49137	30.79951	30.12890
19	34.52985	33.73121	32.95808	32.20954	31.48466	30.78260
19½	35.35309	34.51548	33.70529	32.92147	32.16303	31.42902
20	36.17223	35.29489	34.44694	33.62723	32.83469	32.06825
20½	36.98729	36.06946	35.18306	34.32687	33.49969	32.70037
21	37.79830	36.83921	35.91371	35.02045	34.15811	33.32546
21½	38.60527	37.60419	36.63892	35.70800	34.81001	33.94360
22	39.40823	38.36441	37.35873	36.38959	35.45545	34.55485
22½	40.20720	39.11991	38.07318	37.06527	36.09451	35.15931
23	41.00219	39.87072	38.78231	37.73509	36.72724	35.75705
23½	41.79322	40.61686	39.48617	38.39910	37.35370	36.34813
24	42.58032	41.35837	40.18478	39.05734	37.97396	36.93264
24½	43.36350	42.09528	40.87820	39.70988	38.58808	37.51064
25	44.14279	42.82760	41.56645	40.35676	39.19612	38.08222

TABLE II.

## PRESENT VALUE OF ONE DOLLAR EVERY HALF YEAR.

No. of years.	At rates per cent. per annum.					
	1.	1¼.	1½.	1¾.	2.	2¼.
25½	44.91820	43.55538	42.24957	40.99803	39.79814	38.64743
26	45.68975	44.27864	42.92762	41.63373	40.39419	39.20636
26½	46.45746	44.99741	43.60061	42.26392	40.98435	39.75907
27	47.22135	45.71171	44.26860	42.88865	41.56866	40.30563
27½	47.98145	46.42157	44.93161	43.50795	42.14719	40.84612
28	48.73776	47.12703	45.58969	44.12189	42.71999	41.38058
28½	49.49031	47.82810	46.24287	44.73050	43.28712	41.90911
29	50.239 1	48.52482	46.89118	45.33382	43.84863	42.43175
29½	50.98419	49.21722	47.53467	45.93192	44.40459	42.94858
30	51.72556	49.90531	48.17337	46.52483	44.95504	43.45966
30½	52.46324	50.58913	48.80732	47.11259	45.50004	43.96505
31	53.19726	51.26870	49.43654	47.69526	46.03964	44.46482
31½	53.92762	51.94405	50.06109	48.27287	46.57390	44.95903
32	54.65435	52.61520	50.68098	48.84547	47.10287	45.44774
32½	55.37746	53.28219	51.29626	49.41311	47.62661	45.93102
33	56.09698	53.94503	51.90695	49.97582	48.14516	46.40892
33½	56.81291	54.60376	52.51311	50.53365	48.65857	46.88150
34	57.52529	55.25839	53.11475	51.08664	49.16690	47.34883
34½	58.23411	55.90896	53.71191	51.63484	49.67020	47.81096
35	58.93942	56.55549	54.30462	52.17828	50.16851	48.26794
35½	59.64121	57.19800	54.89292	52.71701	50.66190	48.71984
36	60.33951	57.83652	55.47685	53.25106	51.15039	49.16672
36½	61.03434	58.47108	56.05643	53.78048	51.63405	49.60862
37	61.72571	59.10169	56.63169	54.30531	52.11292	50.04561
37½	62.41365	59.72839	57.20267	54.82558	52.58705	50.47773
38	63.09815	60.35120	57.76940	55.34135	53.05649	50.90505
38½	63.77926	60.97013	58.33191	55.85264	53.52127	51.32762
39	64.45697	61.58523	58.89023	56.35949	53.98146	51.74548
39½	65.13132	62.19650	59.44440	56.86195	54.43709	52.15869
40	68.80231	62.80397	59.99444	57.36005	54.88821	52.56731
40½	66.46996	63.40768	60.54039	57.85383	55.33486	52.97138
41	67.13428	64.00763	61.08227	58.34332	55.77709	53.37096
41½	67.79531	64.60385	61.62012	58.82857	56.21494	53.76609
42	68.45304	65.19638	62.15396	59.30961	56.64845	54.15683
42½	69.10750	65.78522	62.68384	59.78648	57.07768	54.54322
43	69.75871	66.37040	63.20976	60.25921	57.50265	54.92531
43½	70.40668	66.95195	63.73177	60.72785	57.92342	55.30315
44	71.05142	67.52989	64.24990	61.19241	58.34002	55.67678
44½	71.69296	68.10424	64.76417	61.65295	58.75249	56.04626
45	72.33130	68.67502	65.27461	62.10949	59.16088	56.41163
45½	72.96647	69.24226	65.78125	62.56207	59.56523	56.77294
46	73.59847	69.80597	66.28412	63.01073	59.96557	57.13022
46½	74.22734	70.36618	66.78324	63.45549	60.36195	57.48353
47	74.85307	70.92291	67.27865	63.89640	60.75441	57.83291
47½	75.47569	71.47619	67.77038	64.33348	61.14298	58.17840
48	76.09522	72.02602	68.25844	64.76677	61.52770	58.52005
48½	76.71166	72.57245	68.74287	65.19631	61.90862	58.85790
49	77.32503	73.11547	69.22369	65.62211	62.28576	59.19199
49½	77.93536	73.65513	69.70093	66.04423	62.65917	59.52237
50	78.54264	74.19143	70.17462	66.46268	63.02888	59.84906

TABLE III.

## PRESENT VALUE OF ONE DOLLAR EVERY HALF YEAR.

No. of years.	At rates per cent. per annum.					
	2½.	2¾.	3.	3¼.	3½.	3¾.
½	.98765	.98644	.98522	.98401	.98280	.98160
1	1.96312	1.95949	1.95588	1.95229	1.94870	1.94512
1½	2.92653	2.91935	2.91220	2.90508	2.89798	2.89092
2	3.87806	3.86619	3.85438	3.84263	3.83094	3.81931
2½	4.81783	4.80019	4.78265	4.76520	4.74786	4.73061
3	5.74601	5.72152	5.69719	5.67301	5.64900	5.62514
3½	6.66273	6.63035	6.59821	6.56631	6.53464	6.50320
4	7.56812	7.52686	7.48593	7.44532	7.40505	7.36511
4½	8.46234	8.41120	8.36052	8.31028	8.26049	8.21115
5	9.34553	9.28355	9.22219	9.16141	9.10122	9.04162
5½	10.21780	10.14407	10.07112	9.99893	9.92749	9.85680
6	11.07931	10.99292	10.90751	10.82305	10.73955	10.65698
6½	11.93018	11.83025	11.73153	11.63400	11.53764	11.44244
7	12.77055	12.65623	12.54338	12.43198	12.32201	12.21344
7½	13.60055	13.47100	13.34323	13.21720	13.09288	12.97024
8	14.42029	14.27473	14.13126	13.98987	13.85050	13.71312
8½	15.22992	15.06755	14.90765	14.75018	14.59508	14.44233
9	16.02955	15.84962	15.67256	15.49833	15.32686	15.15811
9½	16.81931	16.62108	16.42617	16.23452	16.04606	15.86073
10	17.59932	17.38207	17.16864	16.95893	16.75288	16.55041
10½	18.36969	18.13275	17.90014	17.67177	17.44755	17.22735
11	19.13056	18.87324	18.62083	18.37320	18.13027	17.89192
11½	19.88204	19.60369	19.33086	19.06342	18.80125	18.54422
12	20.62423	20.32423	20.03041	19.74261	19.46069	19.18451
12½	21.35727	21.03500	20.71961	20.41093	20.10878	19.81301
13	22.08125	21.73613	21.39863	21.06856	20.74573	20.42995
13½	22.79630	22.42775	22.06762	21.71568	21.37173	21.03553
14	23.50252	23.10998	22.72672	22.35246	21.98695	21.62997
14½	24.20002	23.78297	23.37608	22.97905	22.59160	22.21347
15	24.88891	24.44683	24.01584	23.59562	23.18585	22.78623
15½	25.56929	25.10168	24.64615	24.20233	23.76988	23.34844
16	26.24127	25.74765	25.26714	24.79934	24.34386	23.90031
16½	26.90496	26.38486	25.87896	25.36860	24.90797	24.44203
17	27.56046	27.01342	26.48173	25.96488	25.46238	24.97377
17½	28.20786	27.63346	27.07560	26.53370	26.00725	25.49572
18	28.84727	28.24509	27.66068	27.09343	26.54275	26.00807
18½	29.47878	28.84842	28.23713	27.64422	27.06904	26.51099
19	30.10250	29.44358	28.80505	28.18619	27.58628	27.00465
19½	30.71852	30.03065	29.36458	28.71950	28.09463	27.48923
20	31.32693	30.60977	29.91585	29.24428	28.59423	27.96489
20½	31.92784	31.18103	30.45896	29.76067	29.08524	28.43179
21	32.52132	31.74454	30.99405	30.26880	29.56780	28.89010
21½	33.10748	32.30041	31.52123	30.76881	30.04207	29.33998
22	33.68640	32.84874	32.04062	31.26082	30.50817	29.78157
22½	34.25817	33.38963	32.55234	31.74496	30.96626	30.21504
23	34.82288	33.92319	33.05649	32.22137	31.41647	30.64053
23½	35.38062	34.44951	33.55319	32.69015	31.85894	31.05819
24	35.93148	34.96869	34.04255	33.15144	32.29380	31.46816
24½	36.47554	35.48083	34.52468	33.60535	32.72118	31.87059
25	37.01288	35.98602	34.99969	34.05201	33.14121	32.26561

TABLE IV.

PRESENT VALUE OF ONE DOLLAR EVERY HALF YEAR.						
No. of years.	At rates per cent. per annum.					
	2½.	2¾.	3.	3¼.	3½.	3¾.
25½	37.54358	36.48436	35.46767	34.49152	33.55401	32.65336
26	38.06773	36.97594	35.92874	34.92401	33.95972	33.03397
26½	38.58542	37.46086	36.38300	35.34957	34.35845	33.40758
27	39.09671	37.93919	36.83054	35.76834	34.75032	33.77431
27½	39.60169	38.41104	37.27147	36.18041	35.13545	34.13429
28	40.10043	38.87649	37.70588	36.58589	35.51395	34.48765
28½	40.59302	39.33562	38.13387	36.98488	35.88595	34.83450
29	41.07952	39.78853	38.55554	37.37750	36.25155	35.17497
29½	41.56002	40.23530	38.97097	37.76384	36.61086	35.50918
30	42.03459	40.67600	39.38027	38.14400	36.96399	35.83723
30½	42.50330	41.11073	39.78352	38.51808	37.31104	36.15924
31	42.96622	41.53956	40.18080	38.88618	37.65213	36.47533
31½	43.42343	41.96257	40.57222	39.24839	37.98735	36.78560
32	43.87499	42.37985	40.95785	39.60481	38.31681	37.09016
32½	44.32098	42.79147	41.33779	39.95553	38.64060	37.38911
33	44.76146	43.19750	41.71211	40.30065	38.95882	37.68256
33½	45.19651	43.59803	42.08089	40.64025	39.27157	37.97062
34	45.62618	43.99312	42.44423	40.97441	39.57893	38.25337
34½	46.05055	44.38286	42.80220	41.30323	39.88102	38.53091
35	46.46968	44.76731	43.15487	41.62680	40.17790	38.80335
35½	46.88363	45.14654	43.50234	41.94519	40.46968	39.07077
36	47.29247	45.52064	43.84467	42.25849	40.75645	39.33327
36½	47.69627	45.88965	44.18194	42.56678	41.03828	39.59094
37	48.09508	46.25367	44.51422	42.87014	41.31526	39.84387
37½	48.48897	46.61274	44.84160	43.16865	41.58748	40.09214
38	48.87800	46.96694	45.16414	43.46238	41.85502	40.33584
38½	49.26222	47.31634	45.48191	43.75142	42.11795	40.57506
39	49.64170	47.66101	45.79499	44.03584	42.37636	40.80988
39½	50.01649	48.00099	46.10343	44.31571	42.63033	41.04037
40	50.38666	48.33637	46.40732	44.59111	42.87994	41.26662
40½	50.75225	48.66719	46.70672	44.86210	43.12524	41.48871
41	51.11334	48.99353	47.00170	45.12875	43.36633	41.70671
41½	51.46996	49.31544	47.29231	45.39115	43.60328	41.92069
42	51.82219	49.63299	47.57863	45.64935	43.83614	42.13074
42½	52.17006	49.94623	47.86072	45.90342	44.06501	42.33693
43	52.51364	50.25522	48.13864	46.15342	44.28993	42.53931
43½	52.85298	50.56002	48.41246	46.39943	44.51099	42.73798
44	53.18813	50.86069	48.68222	46.64151	44.72824	42.93298
44½	53.51914	51.15727	48.94800	46.87971	44.94176	43.12440
45	53.84606	51.44984	49.20985	47.11411	45.15161	43.31229
45½	54.16895	51.73844	49.46784	47.34476	45.35785	43.49673
46	54.48785	52.02312	49.72201	47.57171	45.56054	43.67777
46½	54.80282	52.30394	49.97242	47.79505	45.75974	43.85548
47	55.11389	52.58095	50.21913	48.01480	45.95552	44.02992
47½	55.42113	52.85421	50.46220	48.23105	46.14793	44.20115
48	55.72457	53.12375	50.70168	48.44384	46.33704	44.36923
48½	56.02427	53.38965	50.93761	48.65322	46.52288	44.53421
49	56.32026	53.65193	51.17006	48.85926	46.70554	44.69616
49½	56.61261	53.91066	51.39907	49.06200	46.88505	44.85512
50	56.90134	54.16588	51.62470	49.26150	47.06147	45.01117

TABLE V.

PRESENT VALUE OF ONE DOLLAR EVERY HALF YEAR.						
No. of years.	At rates per cent. per annum.					
	4.	4¼.	4½.	4¾.	5.	5¼.
½	.98039	.97919	.97800	.97680	.97561	.97442
1	1.94156	1.93801	1.93447	1.93094	1.92742	1.92392
1½	2.88388	2.87688	2.86990	2.86295	2.85602	2.84913
2	3.80773	3.79621	3.78474	3.77333	3.76197	3.75067
2½	4.71346	4.69641	4.67945	4.66259	4.64583	4.62916
3	5.60143	5.57788	5.55448	5.53123	5.50813	5.48517
3½	6.47199	6.44101	6.41025	6.37971	6.34939	6.31929
4	7.32548	7.28618	7.24718	7.20851	7.17014	7.13207
4½	8.16224	8.11376	8.06571	8.01808	7.97087	7.92407
5	8.98258	8.92412	8.86622	8.80887	8.75206	8.69580
5½	9.78685	9.71762	9.64911	9.58131	9.51421	9.44780
6	10.57534	10.49461	10.41478	10.33583	10.25776	10.18056
6½	11.34837	11.25543	11.16360	11.07285	10.98318	10.89458
7	12.10625	12.00042	11.89594	11.79278	11.69091	11.59033
7½	12.84926	12.72991	12.61217	12.49600	12.38138	12.26829
8	13.57771	13.44422	13.31263	13.18290	13.05500	12.92890
8½	14.29187	14.14367	13.99768	13.85387	13.71220	13.57262
9	14.99203	14.82856	14.66766	14.50928	14.35336	14.19988
9½	15.67846	15.49920	15.32290	15.14948	14.97889	14.81108
10	16.35143	16.15589	15.96371	15.77483	15.58916	15.40666
10½	17.01121	16.79892	16.59043	16.38567	16.18455	15.98700
11	17.65805	17.42856	17.20335	16.98234	16.76541	16.55250
11½	18.29220	18.04510	17.80279	17.56516	17.33211	17.10353
12	18.91393	18.64881	18.38904	18.13447	17.88499	17.64047
12½	19.52346	19.23996	18.96238	18.69057	18.42438	18.16367
13	20.12104	19.81881	19.52311	19.23377	18.95061	18.67349
13½	20.70690	20.38562	20.07150	19.76436	19.46401	19.17027
14	21.28127	20.94063	20.60783	20.28265	19.96489	19.65435
14½	21.84438	21.48409	21.13235	20.78891	20.45355	20.12604
15	22.39646	22.01625	21.64533	21.28343	20.93029	20.58566
15½	22.93770	22.53733	22.14702	21.76648	21.39541	21.03353
16	23.46833	23.04757	22.63767	22.23832	21.84918	21.46995
16½	23.98856	23.54719	23.11753	22.69921	22.29188	21.89520
17	24.49859	24.03642	23.58683	23.14941	22.72379	22.30957
17½	24.99862	24.51546	24.04580	23.58917	23.14516	22.71335
18	25.48884	24.98454	24.49467	24.01872	23.55625	23.10679
18½	25.96945	25.44386	24.93366	24.43831	23.95732	23.49018
19	26.44064	25.89362	25.36299	24.84817	24.34860	23.86375
19½	26.90259	26.33402	25.78288	25.24852	24.73034	24.22777
20	27.35548	26.76526	26.19352	25.63958	25.10277	24.58248
20½	27.79949	27.18753	26.59513	26.02156	25.46612	24.92812
21	28.23479	27.60100	26.98790	26.39469	25.82061	25.26492
21½	28.66156	28.00588	27.37203	26.75916	26.16644	25.59310
22	29.07996	28.40233	27.74771	27.11518	26.50385	25.91288
22½	29.49016	28.79053	28.11512	27.46293	26.83302	26.22449
23	29.89231	29.17066	28.47444	27.80262	27.15417	26.52813
23½	30.28658	29.54287	28.82586	28.13443	27.46748	26.82400
24	30.67312	29.90734	29.16955	28.45854	27.77315	27.11230
24½	31.05208	30.26422	29.50567	28.77513	28.07137	27.39323
25	31.42361	30.61368	29.83440	29.08437	28.36231	27.66697



TABLE VI.

PRESENT VALUE OF ONE DOLLAR EVERY HALF YEAR.

No. of years.	At rates per cent. per annum.					
	4.	4¼.	4½.	4¾.	5.	5¼.
25½	31.78785	30.95587	30.15589	29.38645	28.64616	27.93371
26	32.14495	31.29094	30.47031	29.68151	28.92308	28.19363
26½	32.49505	31.61903	30.77781	29.96973	29.19325	28.44690
27	32.83828	31.94030	31.07854	30.25126	29.45683	28.69369
27½	33.17479	32.25489	31.37265	30.52626	29.71398	28.93417
28	33.50469	32.56292	31.66030	30.79488	29.96486	29.16849
28½	33.82813	32.86455	31.94161	31.05727	30.20962	29.39683
29	34.14523	33.15990	32.21673	31.31358	30.44841	29.61932
29½	34.45610	33.44911	32.48580	31.56393	30.68137	29.83612
30	34.76089	33.73230	32.74895	31.80848	30.90866	30.04738
30½	35.05969	34.00960	33.00631	32.04736	31.13040	30.25323
31	35.35264	34.28112	33.25800	32.28069	31.34673	30.45382
31½	35.63984	34.54700	33.50416	32.50861	31.55778	30.64927
32	35.92141	34.80734	33.74490	32.73124	31.76369	30.83973
32½	36.19747	35.06227	33.98034	32.94871	31.96458	31.02532
33	36.46810	35.31189	34.21060	33.16113	32.16056	31.20615
33½	36.73343	35.55632	34.43580	33.36863	32.35177	31.38237
34	36.99356	35.79566	34.65604	33.57131	32.53831	31.55407
34½	37.24859	36.03002	34.87143	33.76929	32.72030	31.72139
35	37.49862	36.25951	35.08208	33.96268	32.89786	31.88442
35½	37.74374	36.48422	35.28810	34.15158	33.07108	32.04328
36	37.98406	36.70425	35.48959	34.33609	33.24008	32.19808
36½	38.21967	36.91971	35.68664	34.51633	33.40495	32.34893
37	38.45066	37.13068	35.87935	34.69239	33.56581	32.49591
37½	38.67711	37.33727	36.06783	34.86436	33.72274	32.63913
38	38.89913	37.53955	36.25215	35.03234	33.87584	32.77869
38½	39.11680	37.73763	36.43242	35.19643	34.02521	32.91468
39	39.33019	37.93158	36.60873	35.35670	34.17094	33.04719
39½	39.53940	38.12150	36.78115	35.51326	34.31311	33.17631
40	39.74451	38.30746	36.94978	35.66619	34.45182	33.30213
40½	39.94560	38.48956	37.11470	35.81557	34.58714	33.42473
41	40.14275	38.66787	37.27599	35.96149	34.71916	33.54420
41½	40.33603	38.84247	37.43373	36.10402	34.84796	33.66061
42	40.52552	39.01343	37.58800	36.24324	34.97362	33.77404
42½	40.71129	39.18084	37.73888	36.37923	35.09621	33.88457
43	40.89342	39.34476	37.88643	36.51207	35.21582	33.99227
43½	41.07198	39.50528	38.03074	36.64183	35.33251	34.09722
44	41.24704	39.66245	38.17187	36.76857	35.44635	34.19948
44½	41.41867	39.81635	38.30990	36.89238	35.55741	34.29913
45	41.58693	39.96705	38.44489	37.01331	35.66577	34.39623
45½	41.75189	40.11462	38.57691	37.13144	35.77148	34.49084
46	41.91362	40.25911	38.70602	37.24683	35.87462	34.58304
46½	42.07218	40.40060	38.83230	37.35954	35.97523	34.67288
47	42.22762	40.53914	38.95579	37.46964	36.07340	34.76042
47½	42.38002	40.67480	39.07657	37.57718	36.16917	34.84572
48	42.52943	40.80764	39.19469	37.68223	36.26261	34.92883
48½	42.67592	40.93771	39.31021	37.78484	36.35376	35.00983
49	42.81952	41.06508	39.42319	37.88507	36.44269	35.08875
49½	42.96032	41.18980	39.53368	37.98297	36.52946	35.16565
50	43.09835	41.31192	39.64174	38.07860	36.61410	35.24058

TABLE VII.

PRESENT VALUE OF ONE DOLLAR EVERY HALF YEAR.						
No. of years.	At rates per cent. per annum.					
	5½.	5¾.	6.	6¼.	6½.	6¾.
½	.97324	.97205	.97087	.96970	.96852	.96735
1	1.92042	1.91694	1.91347	1.91001	1.90656	1.90312
1½	2.84226	2.83542	2.82861	2.82183	2.81507	2.80834
2	3.73943	3.72824	3.71710	3.70601	3.69498	3.68401
2½	4.61258	4.59610	4.57971	4.56341	4.54720	4.53108
3	5.46237	5.43971	5.41719	5.39482	5.37259	5.35050
3½	6.28941	6.25974	6.23028	6.20104	6.17200	6.14317
4	7.09431	7.05686	7.01969	6.98282	6.94625	6.90996
4½	7.87768	7.83169	7.78611	7.74092	7.69612	7.65171
5	8.64008	8.58488	8.53020	8.47604	8.42240	8.36925
5½	9.38207	9.31701	9.25262	9.18889	9.12581	9.06336
6	10.10420	10.02869	9.95400	9.88014	9.80768	9.73481
6½	10.80701	10.72048	10.63496	10.55043	10.46690	10.38434
7	11.49101	11.39293	11.29607	11.20042	11.10596	11.01266
7½	12.15670	12.04659	11.93794	11.83071	11.72490	11.62047
8	12.80457	12.68198	12.56110	12.44190	12.32436	12.20844
8½	13.43511	13.29962	13.16612	13.03457	12.90495	12.77721
9	14.04877	13.89999	13.75351	13.60928	13.46726	13.32741
9½	14.64600	14.48359	14.32380	14.16658	14.01188	13.85964
10	15.22725	15.05088	14.87748	14.70698	14.53935	14.37450
10½	15.79295	15.60231	15.41502	15.23101	15.05021	14.87256
11	16.34350	16.13833	15.93692	15.73917	15.54500	15.35435
11½	16.87932	16.65938	16.44361	16.23192	16.02422	15.82041
12	17.40080	17.16586	16.93554	16.70974	16.48834	16.27125
12½	17.90832	17.65819	17.41315	17.17308	16.93786	16.70738
13	18.40226	18.13675	17.87684	17.62238	17.37323	17.12927
13½	18.88297	18.60195	18.32703	18.05807	17.79490	17.53738
14	19.35083	19.05414	18.76411	18.48055	18.20329	17.93217
14½	19.80616	19.49370	19.18846	18.89023	18.59883	18.31407
15	20.24930	19.92097	19.60044	19.28749	18.98192	18.68350
15½	20.68059	20.33630	20.00043	19.67272	19.35295	19.04087
16	21.10033	20.74003	20.38877	20.04628	19.71230	19.38658
16½	21.50883	21.13247	20.76579	20.40851	20.06034	19.72099
17	21.90641	21.51394	21.13184	20.75977	20.39742	20.04449
17½	22.29334	21.88475	21.48722	21.10038	20.72389	20.35743
18	22.66992	22.24520	21.83225	21.43067	21.04009	20.66015
18½	23.03642	22.59558	22.16724	21.75095	21.34634	20.95298
19	23.39311	22.93617	22.49246	22.06153	21.64294	21.23626
19½	23.74025	23.26723	22.80822	22.36270	21.93021	21.51029
20	24.07810	23.58905	23.11477	22.65474	22.20843	21.77537
20½	24.40691	23.90187	23.41240	22.93793	22.47790	22.03180
21	24.72692	24.20595	23.70136	23.21254	22.73889	22.27985
21½	25.03837	24.50153	23.98190	23.47882	22.99166	22.51981
22	25.34147	24.78885	24.25427	23.73704	23.23647	22.75193
22½	25.63647	25.06814	24.51871	23.98743	23.47358	22.97647
23	25.92357	25.33963	24.77545	24.23024	23.70323	23.19369
23½	26.20299	25.60353	25.02471	24.46568	23.92564	23.40381
24	26.47493	25.86005	25.26671	24.69400	24.14106	23.60707
24½	26.73959	26.10940	25.50166	24.91539	24.34969	23.80370
25	26.99717	26.35179	25.72976	25.13008	24.55176	23.99390

TABLE VIII.

PRESENT VALUE OF ONE DOLLAR EVERY HALF YEAR.

No. of years.	At rates per cent. per annum.					
	5½.	5¾.	6.	6¼.	6½.	6¾.
25½	27.24785	26.58740	25.95123	25.33826	24.74747	24.17790
26	27.49183	26.81643	26.16624	25.54013	24.93702	24.35589
26½	27.72927	27.03906	26.37499	25.73588	25.12060	24.52806
27	27.96036	27.25546	26.57766	25.92570	25.29840	24.69462
27½	28.18527	27.46582	26.77443	26.10977	25.47060	24.85574
28	28.40415	27.67030	26.96546	26.28826	25.63739	25.01160
28½	28.61718	27.86906	27.15094	26.46135	25.79892	25.16237
29	28.82451	28.06227	27.33101	26.62918	25.95537	25.30822
29½	29.02628	28.25008	27.50583	26.79194	26.10690	25.44930
30	29.22266	28.43264	27.67556	26.94976	26.25366	25.58578
30½	29.41378	28.61010	27.84035	27.10279	26.39579	25.71781
31	29.59979	28.78260	28.00034	27.25119	26.53346	25.84552
31½	29.78082	28.95028	28.15567	27.39510	26.66679	25.96906
32	29.95700	29.11328	28.30648	27.53464	26.79592	26.08857
32½	30.12846	29.27171	28.45289	27.66995	26.92099	26.20418
33	30.29534	29.42573	28.59504	27.80117	27.04212	26.31602
33½	30.45775	29.57543	28.73305	27.92841	27.15944	26.42420
34	30.61582	29.72095	28.86704	28.05179	27.27306	26.52885
34½	30.76965	29.86241	28.99712	28.17143	27.38311	26.63009
35	30.91937	29.99991	29.12342	28.28745	27.48970	26.72802
35½	31.06508	30.13357	29.24604	28.39995	27.59293	26.82275
36	31.20689	30.26350	29.36509	28.50904	27.69291	26.91439
36½	31.34491	30.38979	29.48067	28.61483	27.78974	27.00304
37	31.47923	30.51255	29.59288	28.71741	27.88352	27.08879
37½	31.60995	30.63189	29.70183	28.81688	27.97436	27.17174
38	31.73718	30.74789	29.80760	28.91334	28.06233	27.25199
38½	31.86100	30.86064	29.91029	29.00687	28.14754	27.32961
39	31.98151	30.97025	30.00999	29.09758	28.23006	27.40470
39½	32.09880	31.07679	30.10679	29.18553	28.30999	27.47734
40	32.21294	31.18035	30.20076	29.27081	28.38740	27.54761
40½	32.32403	31.28103	30.29200	29.35352	28.46237	27.61559
41	32.43214	31.37888	30.38059	29.43371	28.53498	27.68134
41½	32.53737	31.47400	30.46659	29.51148	28.60531	27.74495
42	32.63977	31.56647	30.55009	29.58689	28.67342	27.80648
42½	32.73944	31.65635	30.63115	29.66001	28.73939	27.86600
43	32.83644	31.74372	30.70986	29.73092	28.80329	27.92358
43½	32.93084	31.82864	30.78627	29.79968	28.86517	27.97928
44	33.02271	31.91120	30.86045	29.86636	28.92510	28.03316
44½	33.11213	31.99144	30.93248	29.93102	28.98315	28.08528
45	33.19915	32.06945	31.00241	29.99371	29.03937	28.13570
45½	33.28385	32.14527	31.07030	30.05451	29.09382	28.18448
46	33.36628	32.21897	31.13621	30.11346	29.14656	28.23166
46½	33.44650	32.29062	31.20021	30.17061	29.19764	28.27730
47	33.52457	32.36026	31.26234	30.22607	29.24710	28.32145
47½	33.60056	32.42796	31.32266	30.27982	29.29502	28.36416
48	33.67451	32.49376	31.38122	30.33195	29.34142	28.40548
48½	33.74648	32.55773	31.43808	30.38249	29.38636	28.44544
49	33.81652	32.61990	31.49328	30.43151	29.42989	28.48410
49½	33.88469	32.68034	31.54687	30.47904	29.47205	28.52150
50	33.95104	32.73910	31.59891	30.52513	29.51288	28.55768

TABLE IX.

PRESENT VALUE OF ONE DOLLAR EVERY HALF YEAR.						
No. of years.	At rates per cent. per annum.					
	7.	7½.	8.	8½.	9.	10.
½	.96618	.96386	.96154	.95923	.95694	.95238
1	1.89969	1.89287	1.88609	1.87936	1.87267	1.85941
1½	2.80164	2.78831	2.77509	2.76198	2.74896	2.72325
2	3.67308	3.65138	3.62990	3.60861	3.58753	3.54595
2½	4.51505	4.48326	4.45182	4.42073	4.38998	4.32948
3	5.32855	5.28507	5.24214	5.19974	5.15787	5.07569
3½	6.11454	6.05790	6.00205	5.94699	5.89270	5.78637
4	6.87396	6.80280	6.73275	6.66378	6.59589	6.46321
4½	7.60769	7.52077	7.43533	7.35135	7.26879	7.10782
5	8.31661	8.21279	8.11090	8.01089	7.91272	7.72173
5½	9.00155	8.87980	8.76048	8.64354	8.52892	8.30641
6	9.66334	9.52269	9.38507	9.25039	9.11858	8.86325
6½	10.30274	10.14236	9.98565	9.83251	9.68285	9.39357
7	10.92052	10.73962	10.56312	10.39090	10.22283	9.89864
7½	11.51741	11.31530	11.11839	10.92652	10.73955	10.37966
8	12.09412	11.87017	11.65230	11.44031	11.23401	10.83777
8½	12.65132	12.40498	12.16567	11.93315	11.70719	11.27407
9	13.18968	12.92046	12.65930	12.40590	12.15999	11.68959
9½	13.70984	13.41731	13.13394	12.85938	12.59329	12.08532
10	14.21240	13.89620	13.59033	13.29437	13.00794	12.46221
10½	14.69798	14.35779	14.02916	13.71162	13.40472	12.82115
11	15.16713	14.80269	14.45112	14.11187	13.78442	13.16300
11½	15.62041	15.23151	14.85684	14.49580	14.14777	13.48857
12	16.05837	15.64482	15.24696	14.86407	14.49548	13.79864
12½	16.48152	16.04320	15.62208	15.21734	14.82821	14.09394
13	16.89035	16.42719	15.98277	15.55620	15.14661	14.37518
13½	17.28537	16.79729	16.32959	15.88124	15.45130	14.64303
14	17.66702	17.15401	16.66306	16.19304	15.74287	14.89813
14½	18.03577	17.49784	16.98372	16.49212	16.02189	15.14107
15	18.39205	17.82925	17.29203	16.77902	16.28889	15.37245
15½	18.73628	18.14867	17.58849	17.05421	16.54439	15.59281
16	19.06887	18.45655	17.87355	17.31819	16.78889	15.80268
16½	19.39021	18.75330	18.14765	17.57140	17.02286	16.00255
17	19.70069	19.03933	18.41120	17.81430	17.24676	16.19290
17½	20.00066	19.31501	18.66461	18.04729	17.46101	16.37419
18	20.29050	19.58074	18.90828	18.27078	17.66604	16.54685
18½	20.57053	19.83685	19.14258	18.48516	17.86224	16.71129
19	20.84109	20.08371	19.36787	18.69080	18.04999	16.86789
19½	21.10250	20.32165	19.58449	18.88806	18.22966	17.01704
20	21.35507	20.55099	19.79277	19.07727	18.40158	17.15909
20½	21.59911	20.77204	19.99305	19.25878	18.56611	17.29437
21	21.83488	20.98510	20.18563	19.43288	18.72355	17.42321
21½	22.06269	21.19046	20.37080	19.59988	18.87421	17.54591
22	22.28279	21.38839	20.54884	19.76008	19.01838	17.66277
22½	22.49545	21.57917	20.72004	19.91375	19.15635	17.77407
23	22.70092	21.76306	20.88465	20.06115	19.28837	17.88007
23½	22.89944	21.94030	21.04294	20.20254	19.41471	17.98101
24	23.09125	22.11113	21.19513	20.33817	19.53561	18.07716
24½	23.27657	22.27579	21.34147	20.46827	19.65130	18.16872
25	23.45562	22.43449	21.48219	20.59306	19.76201	18.25592

TABLE X.

## PRESENT VALUE OF ONE DOLLAR EVERY HALF YEAR.

No. of years.	At rates per cent. per annum.					
	7.	7½.	8.	8½.	9.	10.
25½	23.62862	22.58746	21.61749	20.71277	19.86795	18.33898
26	23.79577	22.73490	21.74758	20.82760	19.96933	18.41807
26½	23.95726	22.87702	21.87268	20.93774	20.06634	18.49340
27	24.11330	23.01399	21.99296	21.04340	20.15918	18.56514
27½	24.26405	23.14602	22.10861	21.14474	20.24802	18.63347
28	24.40971	23.27327	22.21982	21.24196	20.33303	18.69854
28½	24.55045	23.39592	22.32675	21.33521	20.41439	18.76052
29	24.68642	23.51414	22.42957	21.42467	20.49224	18.81954
29½	24.81780	23.62809	22.52843	21.51047	20.56673	18.87575
30	24.94474	23.73792	22.62349	21.59278	20.63802	18.92929
30½	25.06738	23.84377	22.71490	21.67173	20.70624	18.98027
31	25.18587	23.94581	22.80278	21.74746	20.77152	19.02883
31½	25.30036	24.04415	22.88729	21.82011	20.83399	19.07508
32	25.41098	24.13894	22.96855	21.88979	20.89377	19.11912
32½	25.51785	24.23030	23.04668	21.95663	20.95098	19.16107
33	25.62111	24.31837	23.12181	22.02075	21.00572	19.20102
33½	25.72088	24.40324	23.19405	22.08226	21.05811	19.23907
34	25.81728	24.48505	23.26351	22.14125	21.10824	19.27530
34½	25.91041	24.56391	23.33030	22.19784	21.15621	19.30981
35	26.00040	24.63991	23.39452	22.25213	21.20211	19.34268
35½	26.08734	24.71317	23.45627	22.30420	21.24604	19.37398
36	26.17134	24.78378	23.51564	22.35415	21.28808	19.40379
36½	26.25251	24.85183	23.57273	22.40206	21.32830	19.43218
37	26.33092	24.91743	23.62763	22.44802	21.36680	19.45922
37½	26.40669	24.98065	23.68041	22.49211	21.40363	19.48497
38	26.47989	25.04159	23.73116	22.53439	21.43888	19.50949
38½	26.55062	25.10033	23.77996	22.57496	21.47262	19.53285
39	26.61896	25.15695	23.82689	22.61387	21.50490	19.55510
39½	26.68498	25.21152	23.87201	22.65119	21.53579	19.57628
40	26.74878	25.26411	23.91539	22.68700	21.56534	19.59646
40½	26.81041	25.31481	23.95711	22.72134	21.59363	19.61568
41	26.86996	25.36367	23.99722	22.75428	21.62070	19.63398
41½	26.92750	25.41076	24.03579	22.78588	21.64660	19.65141
42	26.98309	25.45616	24.07287	22.81619	21.67139	19.66801
42½	27.03681	25.49991	24.10853	22.84527	21.69511	19.68382
43	27.08870	25.54208	24.14282	22.87316	21.71781	19.69887
43½	27.13884	25.58273	24.17579	22.89991	21.73953	19.71321
44	27.18729	25.62191	24.20749	22.92558	21.76032	19.72687
44½	27.23409	25.65967	24.23797	22.95019	21.78021	19.73987
45	27.27932	25.69607	24.26728	22.97381	21.79924	19.75226
45½	27.32301	25.73115	24.29546	22.99646	21.81746	19.76406
46	27.36523	25.76497	24.32256	23.01818	21.83489	19.77529
46½	27.40602	25.79756	24.34861	23.03903	21.85156	19.78599
47	27.44543	25.82897	24.37367	23.05902	21.86753	19.79618
47½	27.48351	25.85925	24.39776	23.07819	21.88280	19.80589
48	27.52030	25.88843	24.42092	23.09659	21.89742	19.81513
48½	27.55584	25.91656	24.44319	23.11423	21.91140	19.82394
49	27.59018	25.94367	24.46461	23.13116	21.92479	19.83232
49½	27.62337	25.96981	24.48520	23.14740	21.93760	19.84030
50	27.65543	25.99499	24.50500	23.16297	21.94985	19.84791

TABLE XI.

AMOUNT OF ONE DOLLAR EVERY HALF YEAR.

No. of years.	At rates per cent. per annum.		No. of years.	At rates per cent. per annum.	
	3½.	4.		3½.	4.
½	1.00000	1.00000	25½	81.28301	87.27099
1	2.01750	2.02000	26	83.70547	90.01641
1½	3.05281	3.06040	26½	86.17031	92.81674
2	4.10623	4.12161	27	88.67829	95.67307
2½	5.17809	5.20404	27½	91.23016	98.58653
3	6.26871	6.30812	28	93.82669	101.55826
3½	7.37841	7.43428	28½	96.46866	104.58943
4	8.50753	8.58297	29	99.15686	107.68122
4½	9.65641	9.75463	29½	101.89210	110.83484
5	10.82540	10.94972	30	104.67522	114.05154
5½	12.01484	12.16872	30½	107.50703	117.33257
6	13.22510	13.41209	31	110.38841	120.67922
6½	14.45654	14.68033	31½	113.32020	124.09281
7	15.70953	15.97394	32	116.30331	127.57466
7½	16.98445	17.29342	32½	119.33861	131.12615
8	18.28168	18.63929	33	122.42704	134.74868
8½	19.60161	20.01207	33½	125.56951	138.44365
9	20.94463	21.41231	34	128.76698	142.21252
9½	22.31117	22.84056	34½	132.02040	146.05677
10	23.70161	24.29737	35	135.33076	149.97791
10½	25.11639	25.78332	35½	138.69905	153.97747
11	26.55593	27.29898	36	142.12628	158.05702
11½	28.02065	28.84496	36½	145.61349	162.21816
12	29.51102	30.42186	37	149.16173	166.46252
12½	31.02746	32.03030	37½	152.77206	170.79177
13	32.57044	33.67091	38	156.44557	175.20761
13½	34.14042	35.34432	38½	160.18336	179.71176
14	35.73788	37.05121	39	163.98657	184.30599
14½	37.36329	38.79223	39½	167.85634	188.99211
15	39.01715	40.56808	40	171.79382	193.77196
15½	40.69995	42.37944	40½	175.80022	198.64740
16	42.41220	44.22703	41	179.87672	203.62034
16½	44.15441	46.11157	41½	184.02456	208.69275
17	45.92712	48.03380	42	188.24499	213.86661
17½	47.73084	49.99448	42½	192.53928	219.14394
18	49.56613	51.99437	43	196.90872	224.52682
18½	51.43354	54.03425	43½	201.35462	230.01735
19	53.33362	56.11494	44	205.87833	235.61770
19½	55.26696	58.23724	44½	210.48120	241.33005
20	57.23413	60.40198	45	215.16462	247.15666
20½	59.23573	62.61002	45½	219.93000	253.09979
21	61.27236	64.86222	46	224.77877	259.16178
21½	63.34462	67.15947	46½	229.71240	265.34502
22	65.45315	69.50266	47	234.73237	271.65192
22½	67.59858	71.89271	47½	239.84018	278.08496
23	69.78156	74.33056	48	245.03739	284.64666
23½	72.00274	76.81718	48½	250.32554	291.33959
24	74.26278	79.35352	49	255.70624	298.16638
24½	76.56238	81.94059	49½	261.18110	305.12971
25	78.90222	84.57940	50	266.75177	312.23230

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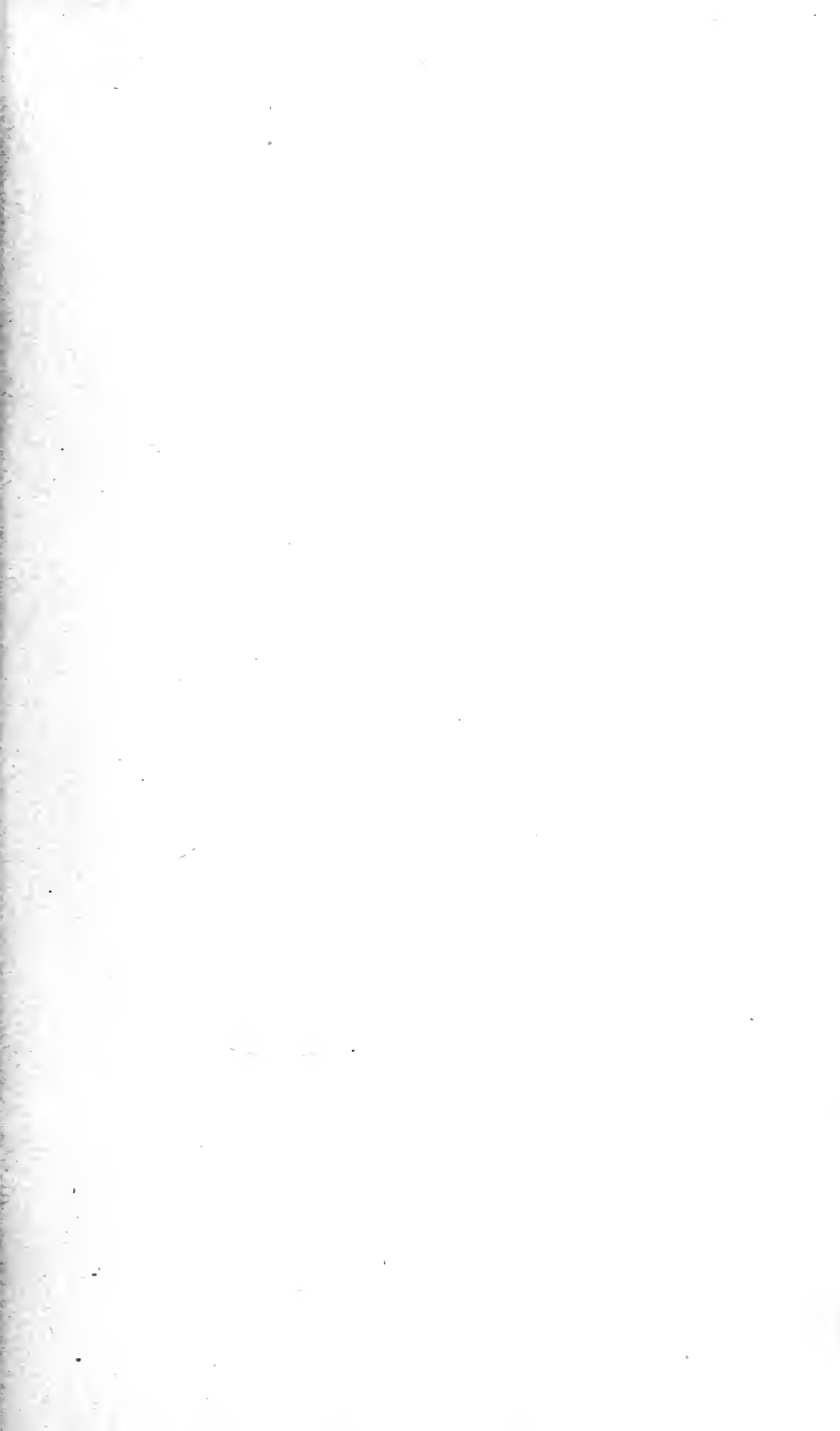
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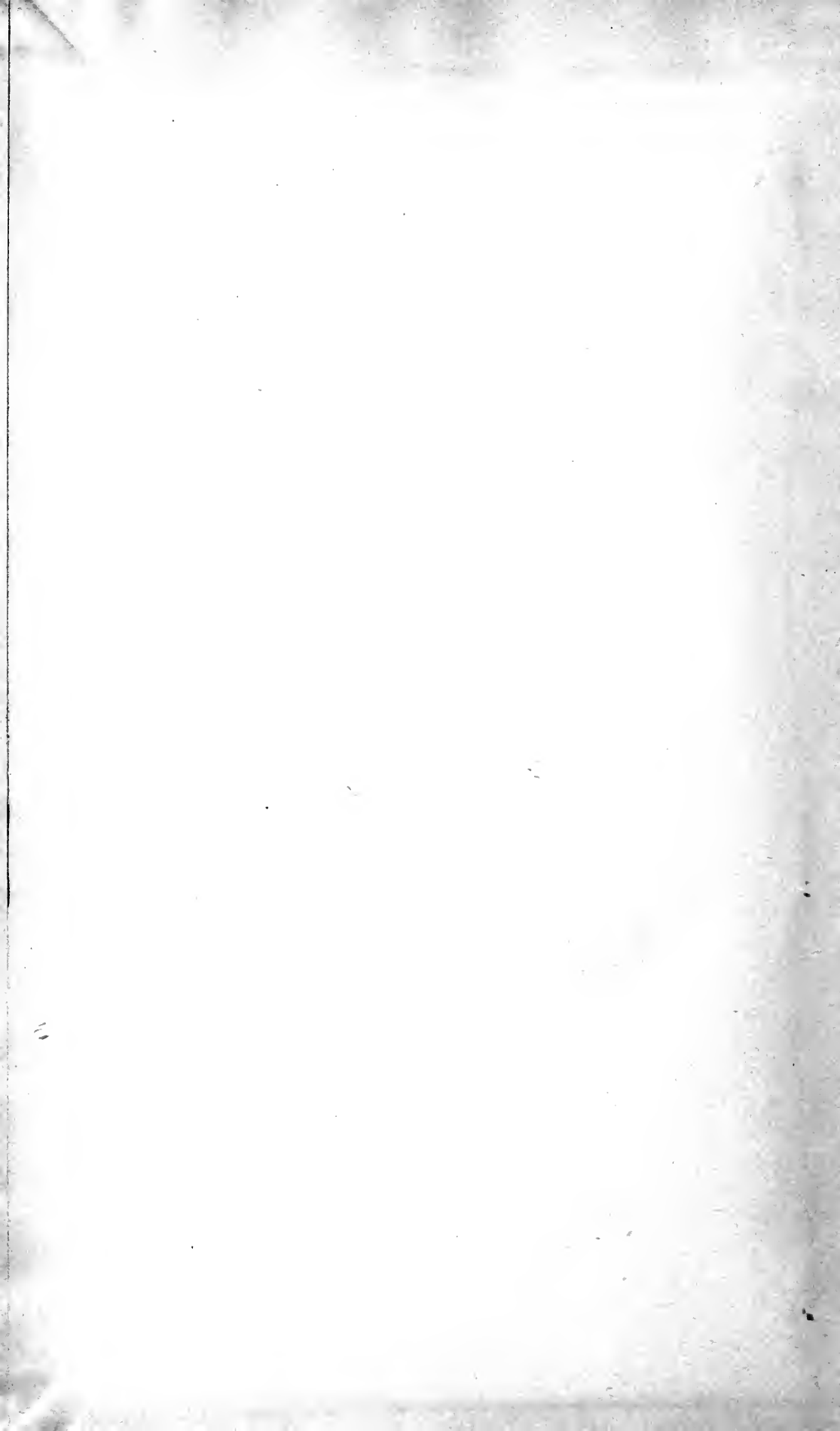
















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